

Abstract

This invention provides a process for synthesizing biodiesel from renewable oils, comprising: carrying out a transesterification reaction, in the presence of an enzyme catalyst, between a low carbon fatty acid ester RCOOR' as an acyl acceptor and a renewable oil, wherein the molar ratio of the low carbon fatty acid ester to the renewable oil is in the range of from 3:1 to 20:1, the transesterification reaction producing a glycerine tri-(low carbon) carboxylic ester by-product, and reacting the glycerine tri-(low carbon) carboxylic ester by-product with a low carbon alcohol $\text{R}'\text{OH}$ to obtain the low carbon fatty acid ester, wherein the low carbon fatty acid ester is capable of being recycled in a further round of biodiesel synthesis, wherein R and R' are independently selected from the group consisting of alkyls with one to four carbon atoms.